RESEARCH DEPARTMENT

THE SERVICE AREA OF THE PONTOP PIKE TELEVISION TRANSMITTER

Report No. K-121

(1957/4)

THE BRITISH BROADCASTING CORPORATION
ENGINEERING DIVISION

RESEARCH DEPARTMENT

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SUMMARY

A field strength survey of the Pontop Pike television transmission has been carried out. The service provided conforms well with that expected from site test measurements. The heavily populated industrial areas of Tyneside are well served. The Tees-side area is provided with a fair service.

1. INTRODUCTION

The Pontop Pike vision transmitter is the third of the medium power transmitters to come into full service. From 1st May 1953 until 14th November 1955 a temporary service was provided by an aerial 235 ft (72 m) above ground level with an effective radiated power (e.r.p.) of 1 kW. On 15th November 1955 the service was taken over by a transmission with an e.r.p. of 12 kW from an aerial 463 ft (141 m) above ground level.

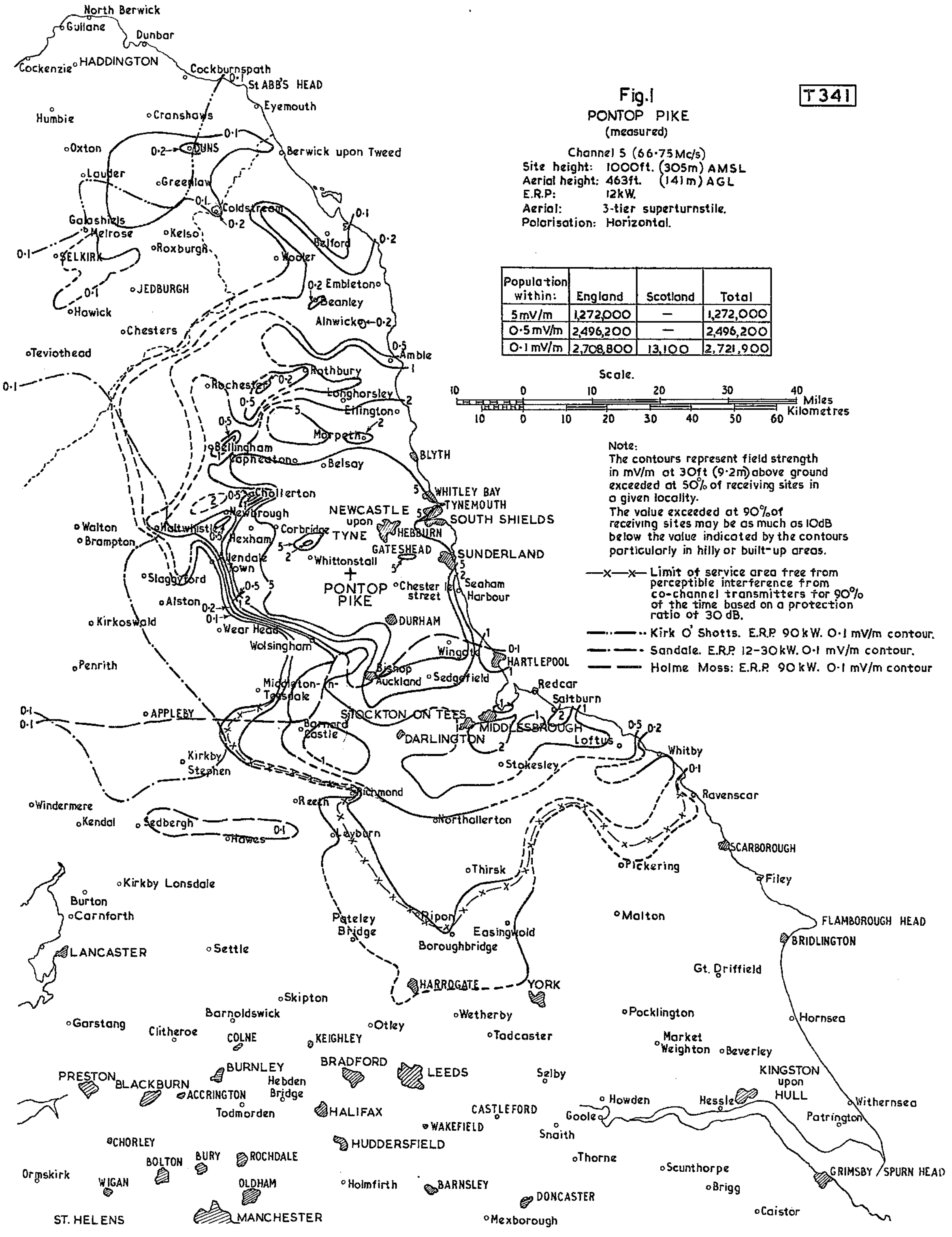
2. GENERAL

The Pontop Pike vision transmission is provided by a 5 kW transmitter driving a nominally omnidirectional three-tier superturnstile aerial. The mid-point of the aerial is 463 ft (141 m) above ground level and the site is 1000 ft (305 m) above mean sea level. The transmission is horizontally polarised; the vision frequency is 66·75 Mc/s (Channel 5).

The survey was carried out by measuring the field strength of the sound transmission (e.r.p. 3 kW) with a horizontal loop aerial mounted 12 ft (3·7 m) above ground level. The field strengths so measured have been corrected to correspond to the peak-white value of the vision transmission (e.r.p. 12 kW) at a height of 30 ft (9·2 m) above ground level.

3. RESULTS

The results of the survey are presented in a field strength contour map T.341 (Fig. 1) and the maximum, median and minimum field strength values in most of the towns in the area are given in Table 1.



T341

Fig.1

PONTOP PIKE

(measured)

Channel 5 (66·75 Mc/s)

Site height: 1000ft. (305m) AMSL
Aerial height: 463ft. (141m) AGL
E.R.P: 12kW.
Aerial: 3-tier superturnstile.
Polarisation: Horizontal.

Population within:	England	Scotland	Total
5 mV/m	1,272,000	—	1,272,000
0·5 mV/m	2,496,200	—	2,496,200
0·1 mV/m	2,708,800	13,100	2,721,900

Scale.

Note:
The contours represent field strength in mV/m at 30ft (9·2m) above ground exceeded at 50% of receiving sites in a given locality.
The value exceeded at 90% of receiving sites may be as much as 10dB below the value indicated by the contours particularly in hilly or built-up areas.

—x—x— Limit of service area free from perceptible interference from co-channel transmitters for 90% of the time based on a protection ratio of 30 dB.
—·—·— Kirk O' Shotts. E.R.P. 90 kW. 0·1 mV/m contour.
—·—·— Sandale. E.R.P. 12-30 kW. 0·1 mV/m contour.
— — Holme Moss: E.R.P. 90 kW. 0·1 mV/m contour

TABLE 1

Field Strength in mV/m at 30 ft (9·2 m) AGL

Town	Max.	Median	Min.
Alnwick	0·5	0·2	0·06
Amble	1·6	0·6	0·2
Bebside/Cowpen	5·0	2·5	1·1
Bedale	0·7	0·45	0·1
Belford	0·4	0·06	0·03
Bellingham	4·0	1·4	0·4
Berwick upon Tweed	0·2	0·04	0·01
Billingham	2·8	1·1	0·2
Bishop Auckland	12	3·2	1·1
Blyth	4·5	2·0	0·6
Boroughbridge	0·2	0·1	0·06
Boston Spa	0·1	0·06	0·04
Brampton	0·08	<0·01	–
Brotton	28	5·6	2·0
Catterick	0·7	0·25	0·1
Chester Le Street	16	5·6	1·6
Coldstream	0·7	0·3	0·1
Collingham	0·09	0·06	0·04
Consett	250	56	13
Corbridge	35	9·0	1·1
Cornsay	40	5·0	0·8
Coxhoe	35	14	5·6
Dalton upon Tees	–	1·1	–
Darlington	2·0	0·7	0·2
Duns	1·1	0·25	0·06
Durham	28	7·9	1·1
Easingwold	0·3	0·1	0·06
Egglescliffe	2·5	1·3	0·4
Eston	5·0	2·5	1·0
Framwellgate Moor	14	7·0	4·0
Gateshead	56	16	1·6
Gosforth	18	10	6·3
Great Ayton	2·5	1·7	0·6
Greatham	3·2	1·8	0·6
Guisborough	1·3	0·5	0·2
Haltwhistle	2·0	0·6	0·07
Harewood	0·2	0·1	0·06
Harrogate	0·3	0·2	0·1
Hawick	–	<0·01	–
Hebburn	11	7·0	2·2
Heighington	7·9	1·8	0·45
Helmsley	–	0·03	–
Heworth	7·0	3·1	1·3
Hexham	10	2·2	0·2
Hinderwell	2·0	0·9	0·3

Town	Max.	Median	Min.
Jarrow	5·0	3·2	1·3
Jedburgh	–	<0·01	–
Kelso	0·1	0·03	0·01
Kirkby Moorside	–	0·035	–
Knaresborough	0·2	0·17	0·12
Leeming	0·6	0·3	0·09
Lesbury	0·6	0·35	0·1
Leyburn	0·1	0·06	0·03
Loftus	3·2	0·7	0·2
Malton	0·35	0·05	0·02
Marske	2·2	1·1	0·6
Melrose	0·2	0·04	<0·01
Middlesbrough	3·2	1·2	0·2
Morpeth	4·0	1·2	0·4
Newcastle upon Tyne	67	14	3·2
Northallerton	0·6	0·4	0·1
North Sunderland	0·4	0·2	0·09
Norton	0·2	0·1	0·06
Pegswood	8·9	4·0	2·2
Pickering	0·1	0·06	0·02
Pocklington	0·05	0·03	<0·01
Ponteland	14	7·0	1·6
Redcar (with Coatham)	2·2	1·1	0·25
Richmond	0·2	0·05	0·02
Ripon	0·25	0·2	0·1
Romanby	0·9	0·5	0·2
Rothbury	1·0	0·3	0·1
Ryhope	2·2	1·4	0·4
Seamer	0·04	0·02	0·01
Sedgefield	8·9	3·5	1·6
Selkirk	–	<0·01	–
Shildon	12	3·5	0·8
Skelton	7·0	2·5	1·4
South Shields	13	4·5	0·9
Spennymoor	40	11	3·6
Staindrop	1·4	0·5	0·25
Stanhope	0·2	0·08	0·01
Stockton on Tees	2·2	1·0	0·2
Stokesley	2·2	1·2	0·5
Sunderland	40	5·0	1·0
Sunderland Bridge	50	31	22
Sutton on the Forest	0·2	0·09	0·04
Tadcaster	0·09	0·06	0·03
Thirsk	0·6	0·2	0·06
Thornaby On Tees	3·2	1·4	0·45
Topcliffe	0·4	0·2	0·09
Tow Law	45	14	4·5
Tynemouth	11	5·6	2·5
West Hartlepool	1·8	0·6	0·2

Town	Max.	Median	Min.
Wetherby	0·1	0·07	0·03
Whitby	1·0	0·1	0·02
Whitley Bay	8·9	3·2	0·4
Willington	1·0	0·45	0·2
Winston	–	2·5	–
Wolsingham	1·1	0·45	0·2
Wooler	0·1	0·05	0·02
Yarm	2·0	0·8	0·25
York	0·2	0·06	0·02

The survey map shows much more detail than was possible in the site test report (Research Department Report No. K-080 (1950/29)) and there is very good agreement between the general position of the contours on both maps. The heavily populated industrial areas of Newcastle, Gateshead, South Shields and Sunderland are very well served, the median field strength in all cases being 4·5 mV/m or more.

There is a considerable overlap between the 0·1 mV/m contours of Holme Moss and Pontop Pike, but this was inevitable if the Tees-side area was to be served. This area includes Middlesbrough and Stockton and the median field strengths from Pontop Pike of 1·2 and 1·0 mV/m respectively will provide a satisfactory service. A field strength of less than 1·0 mV/m would not have been sufficient in the area.

In Scotland the sparsely populated high altitude areas of Berwickshire receive a fringe area service from Pontop Pike but the more populated areas of the Tweed and Teviot valleys (Berwick, Kelso, Jedburgh, Galashiels, etc.) are not served by either Kirk o' Shotts or Pontop Pike.

4. CONCLUSIONS

The service provided by the Pontop Pike television transmitter is satisfactory and includes the whole of Northumberland (except a small area near the Border), Durham and most of the North Riding of Yorkshire. The densely populated areas of Tyneside are particularly well served and the whole of Tees-side is provided with a satisfactory service.

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